Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Request by Progeny LMS, LLC for Waiver of Certain Multilateration Location and Monitoring Service Rules	)	WT Docket No. 11-49
	)	
	)	
Progeny LMS, LLC Demonstration of Compliance with Section 90.353(d) of the Commission's Rules	)	

To: The Commission

OPPOSITION OF PROGENY LMS, LLC

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SUMMARY

The petitions for reconsideration that were filed against the Commission's Order are highly repetitious, consisting of arguments that have already been discussed at length by the parties, Progeny, and the Commission during the previous 16 months of this proceeding. The petitioners advance no legal or public policy arguments to disturb the Commission's well-considered conclusions in the Order. The Commission's Order strikes a sensible policy balance grounded in a reasonable interpretation of its rules, and no need exists for the Commission to reconsider its decision.

The Commission clearly applied its "unacceptable levels of interference" standard in the Order. The Commission did not change the standard but rather provided an extensive and detailed analysis as to why the comprehensive joint and independent test results demonstrate that Progeny satisfied the requirement. Contrasting the unacceptable levels of interference standard against the harmful interference standard, the Commission appropriately explained that the M-LMS "unacceptable levels of interference" standard does not provide a greater level of protection to Part 15 devices than the Commission's "harmful interference" standard, and that Part 15 devices must accept harmful interference from other operations in the band. The Commission did not, and need not, adopt a bright-line rule for what constitutes unacceptable levels of interference to Part 15 devices. Such an endeavor would elevate the status of Part 15 operations and undermine the established relationship between licensed and unlicensed operations in the 902-928 MHz band.

The Commission's analysis of the "unacceptable levels of interference" standard appropriately took into consideration the numerous ways in which the design of Progeny's system contributes to a reduced potential for interference with co-frequency devices. Although

the Commission's rules permit Progeny to operate a bi-directional system with no duty cycle, Progeny designed a system that uses a broadcast-only structure with a very low duty cycle, voluntary design decisions that dramatically reduce the potential for interference. The Commission's consideration of the highly compatible design of Progeny's system reinforces and does not detract from the Commission's equally thorough examination of the field test results.

The Commission fully and adequately considered the spectrum sharing capabilities of Progeny's M-LMS network with SCADA systems used by utilities. Petitioners' arguments to the contrary are unavailing. The Commission also correctly concluded that Progeny's service will not cause unacceptable interference to wireless broadband networks. Despite WISPA's insistence that Progeny's network causes dramatic – even mathematically impossible – reductions in throughput, the Commission appropriately concluded that the joint test results demonstrate continued functionality in all cases and continued opportunity to provide wireless broadband service to consumers, both unimpeded on numerous non-co-channel configurations and with minimal impact even in many variations of co-channel and overlapping channel configurations. In further support of the Commission's decision, Progeny's network has been in operation in the San Francisco Bay Area for more than three years and across 39 other major Economic Areas for nearly one year. During this time, the Commission observed, there has been a conspicuous absence of complaints that would suggest a significant impact on Part 15 operation.

Failing to find support in the extensive data from the joint and independent testing, several petitioners resort to urging the Commission to require still further testing with even more parties and devices. Petitioners such as Plantronics attempt to identify additional Part 15 devices that they claim are not representative of the Part 15 devices that were used in the joint and

independent testing. The joint and independent tests, however, included devices with audio quality requirements that are arguably at least as demanding as those of Plantronics, as well as devices using similar voice encoding and modulation, channel selection, and power control technologies. Although manufacturers commonly and understandably claim distinctions between their proprietary devices and those of competitors, the minor technical variations between different implementations of well-known technologies in no way detract from the breadth or representativeness of the joint tests.

The Coalition also advances several arguments regarding the purported need for further testing with emergency voice pendants, RFID devices, and duress and alarm systems. Nothing about these devices, or the arguments in support of them, raises issues that have not already been considered previously in this proceeding. The individual and joint testing included representative RFID devices, an emergency voice pendant, and a Part 15 repeater, which, like all other devices, were subjected to worst case and sometimes break case scenarios and continued to function. This result is representative of the many similar devices discussed by the Coalition, which employ common interference mitigation techniques precisely to accommodate such potential interference in the band.

The arguments of the petitioners essentially amount to seeking the "endless rounds of field tests" that the Commission expressly declined to allow on the grounds that it would effectively elevate unlicensed users to a form of interference protection that exceeds their Part 15 status. The Commission has articulated at length its basis for concluding that the 18 months of field testing already conducted involved an appropriately representative cross-section of Part 15 devices and that the results of the tests provided an adequate basis for the Commission's conclusions.

The Commission also correctly weighed the significant public interest benefits of Progeny's highly accurate position location technology. The petitioners' arguments give short shrift to the results of the Commission's CSRIC testing. The public safety community, however, has commented unequivocally and at length on this matter to ensure that the test results and their significance to public safety are not mischaracterized. Public safety entities have made clear that they supports *any* improvement in the impossibly large search rings currently facing first responders, and that the CSRIC Report indicates that Progeny's technology holds *tremendous* promise for *immediate and dramatic improvement* in wireless location accuracy in precisely those areas that are the most challenging for existing technologies.

Finally, the Commission correctly concluded that there is no need to impose additional conditions on Progeny's commercial operating authority beyond the spectrum etiquette measures that Progeny has voluntarily undertaken.

The intensely repetitious nature of the arguments advanced in the petitions for reconsideration is by itself sufficient grounds for the Commission to summarily dismiss them. Beyond that, however, the arguments above have been addressed repeatedly and at length in this proceeding and the Commission appropriately found them to be unavailing. The Commission properly considered and applied its unacceptable levels of interference standard and reasonably concluded that, based on the extensive test results, Progeny has demonstrated that its network complies with the Commission's rules. The petitions have shown no reason for the Commission to modify its decision on reconsideration and the Commission is therefore well justified in dismissing the petitions.

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To: The Commission

OPPOSITION OF
PROGENY LMS, LLC

Progeny LMS, LLC ("Progeny"), through its attorneys and pursuant to Section 1.106(g) of the Commission's rules,[1] hereby opposes the petitions for reconsideration that were filed addressing the Commission's *Order* granting approval for Progeny to begin commercial operation of its Multilateration Location and Monitoring Service ("M-LMS") network.[2]

A petition for reconsideration of a Commission order is appropriate "only where the petitioner either shows a material error or omission in the original order or raises additional facts

[1] By separate pleading filed on this date, Progeny requests a waiver of the requirement that oppositions to petitions for reconsideration not exceed 25 double spaced typewritten pages. *See Progeny LMS, LLC Petition for Waiver of Section 1.106(g) of the Commission's Rules*, WT 11-49 (July 19, 2013).

[2] *See Petition for Reconsideration of the Part 15 Coalition*, WT-11-49 (July 8, 2013) ("*Part 15 Coalition*"); *Petition for Reconsideration of the Utility Trade Associations*, WT-11-49 (July 8, 2013) ("*Utility Trade Associations*"); *Petition for Reconsideration of the Wireless Internet Service Providers Association*, WT-11-49 (July 8, 2013) ("*WISPA*"); *Petition for Reconsideration of Plantronics, Inc.*, WT-11-49 (July 8, 2013) ("*Plantronics*"); *Petition for Reconsideration of Silver Spring Networks, Inc.*, WT-11-49 (July 8, 2013) ("*Silver Spring Networks*"); *Petition for Reconsideration, and Petition to Deny of Skybridge Spectrum Foundation, et. al*, WT-11-49 (July 8, 2013) ("*Havens*").

not known or existing until after the petitioner's last opportunity to present such matters."[3] To the extent a petition simply repeats arguments that previously were considered and rejected in the proceeding, "the Commission may deny the petition for the reasons already provided."[4]

Overwhelming, the arguments that were presented in the petitions for reconsideration repeat in detail the same arguments that were repetitiously made during the 16 months since the Commission first began its review of the results of Progeny's initial testing with Part 15 devices. Several of the petitioners acknowledge that they are repeating the same arguments. Other petitioners attempt to frame the arguments as new, invariably by opening each argument with the preface that the Commission "materially erred" or the *Order* was "incorrect" or "omitted consideration" of an issue prior to repeating the same argument almost verbatim.

The Commission's rules prohibiting repetitious pleading should not be so casually disregarded, and its reconsideration process should not be treated solely as another bite at the same apple. Administrative efficiency and the staggering demands of spectrum policy require that the Commission and its staff expend its resources only on petitions for reconsideration that

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[3] *See, e.g.*, Applications of Cellco Partnership d/b/a Verizon Wireless and Atlantis Holdings LLC for Consent to Transfer Control of Licenses, Authorizations, and Spectrum Manager and De Facto Transfer Leasing Arrangements and Petition for Declaratory Ruling that the Transaction is Consistent with Section 310(b)(4) of the Communications Act, FCC 12-155, *Order on Reconsideration*, ¶ 2 (rel. Dec. 19, 2012); General Motors Corp. and Hughes Electronics Corp., Transferors, and The News Corp. Ltd., Transferee, For Authority to Transfer Control, MB Docket No. 03-124, *Order on Reconsideration,* 23 FCC Rcd 3131, 3132, ¶ 4 (2008).

[4] *See* Applications for Consent to the Transfer of Control of Licenses, XM Satellite Radio Holdings Inc., Transferor to Sirius Satellite Radio Inc., Transferee, FCC 12-15, *Memorandum Opinion & Order*, ¶ 6 (rel. Feb 2, 2012) (*citing Safeview Inc*., Memorandum Opinion and Order, 25 FCC Rcd 592, 594, ¶ 7 (2010); *Applications of WWIZ*, Memorandum Opinion and Order, 37 FCC 685 (1964), *aff'd sub nom. Lorain Journal Co. v. FCC*, 351 F.2d 824 (D.C. Cir. 1965), *cert denied*, 383 U.S. 967 (1966)); *see also* Amendment of Certain of the Commission's Part 1 Rules of Practice and Procedure and Part 0 Rules of Commission Organization, GC Docket No. 10-44, *Report and Order*, 26 FCC Rcd 1594, 1606-07, ¶ 28 (2011).

legitimately identify material errors or omissions in Commission decisions.[5] Progeny therefore urges the Commission to summarily deny the petitions as repetitious of the arguments that were repeatedly made and thoroughly explored during the 16 month proceeding before the Commission. Further, in order to ensure the documentation of a complete record in this proceeding, Progeny explains herein why each of the arguments that were raised by the petitioners were appropriately rejected in the Commission's *Order* and should continue to be rejected on reconsideration.

I. THE COMMISSION IS THE EXPERT AGENCY TASKED WITH INTERPRETING AND APPLYING COMPLEX TECHNICAL RULES, SUCH AS THOSE GOVERNING SPECTRUM SHARING

Spectrum policy is a highly technical area of regulation, and the Commission, as the nation's expert agency for communications policy, appropriately receives the utmost judicial deference in its decisions on these matters. The creation and analysis of standards in this area is necessarily complex because it deals not only with the function of evolving technologies but also with the wider policy questions regarding how such technologies can and should share limited spectrum and how they fit into national policy priorities.

It is well established that the Commission is the expert agency for communications policy questions, created "for the purpose of regulating interstate and foreign commerce in

[5] *See, e.g.*, *Skybridge Spectrum Foundation, FOIA Control Nos. 2010-495, 2010-496, 2010-506, 2010-507, 2010-508, 2010-538, 2011-241, and 2011-242*, Memorandum Opinion and Order, FCC 12-63, ¶ 9 n.15 (explaining that "reconsideration will not be granted for the purpose of again debating matters that have been fully considered"); *Implementation of the Subscriber Carrier Selection Changes Provisions of the Telecommunications Act of 1996, CC Docket No 94-129*, Fifth Order on Reconsideration, FCC 04-214 ¶ 9 n.29 (explaining that "petitions for reconsideration are not granted for the purpose of altering our basic findings or debating matters that have been fully considered and substantively settled").

communication by wire and radio"[6] and empowered with "authority to manage spectrum and establish and modify license and spectrum usage conditions in the public interest."[7] This role is particularly important when the Commission is exercising its discretion in determining how to implement the provisions of the Communications Act, especially when dealing with the use and sharing of limited radio spectrum. As part of its authority over the orderly use of radio spectrum, the Act necessarily confers on the Commission the authority to regulate "the interference potential of devices which in their operation are capable of emitting radio frequency energy."[8]

It is equally well settled that "where a 'highly technical question' is involved, 'courts necessarily must show considerable deference to [the Commission's] expertise.'"[9] Under Chevron, when a "statute is silent or ambiguous" on a question at issue, a court must defer to the administering agency's construction of the statute so long as it is permissible.[10] When interpreting its own regulations, an agency's holdings are "controlling unless plainly erroneous or inconsistent with the regulation[] being interpreted."[11] An agency need only articulate a

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[6] 47 U.S.C. § 151.

[7] *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other Providers of Mobile Data Services, WT Docket No. 05-265*, Second Report and Order, FCC 11-52, ¶ 2 (rel. Apr. 7, 2011) ("*Data Roaming Order"*) *aff'd* Cellco Partnership v. Federal Communications Commission, No. 11-1135 (D.C. Cir. filed Dec. 4, 2012) ("*Cellco Partnership*").

[8] 47 U.S.C. § 302a(a).

[9] Am. Radio Relay League, Inc. v. FCC v. FCC, 524 F.3d 227, 233 (2008) (quoting MCI Cellular Tel. Co. v. FCC, 738 F.2d 1322, 1333 (D.C. Cir. 1984) ("*MCI Cellular*").

[10] Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc., 467 U.S. 837, 842-45 (1984).

[11] LongIsland Care at Home, Ltd. v. Coke, 127 S. Ct. 2339, 2349 (2007) (quotation marks and citations omitted); *see* Udall v. Tallman, 292 U.S. 1, 16-17 (1965); Cassell v. FCC, 154 F.3d 478, 483 (D.C. Cir. 1998).

"rational connection between the facts found and the choice made,"[12] and the court "will not intervene unless the Commission failed to consider relevant factors or made a manifest error in judgment."[13] The regulation of spectrum, in particular the sharing of limited spectrum between potentially conflicting uses, is among the most complex and technical of the issues overseen by the Commission, and therefore deference to the Commission's judgments in this area is particularly appropriate.[14]

Importantly, in its role as the government's designated expert agency and policymaker, the Commission must "predict the effect and growth rate of technological newcomers on the spectrum, while striking a balance between protecting valuable existing uses and making room for these sweeping new technologies."[15] The courts have recognized that decisionmaking regarding spectrum management is the kind of "predictive judgment…which [they] have historically left to agency discretion."[16] When making such prospective determinations regarding complex technical interactions and policy priorities, the Commission "functions as a policymaker and, inevitably, a seer – roles in which it will be accorded the greatest deference."[17]

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[12] Motor Vehicle Mfrs. Ass'n of the United States, Inc. v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983) (citation omitted).

[13] Consumer Elecs. Ass'n v. FCC, 347 F.3d 291, 300 (D.C. Cir. 2003).

[14] *See MCI Cellular*, 738 F.2d at 1333; Weyerhaeuser Co. v. Costle, 590 F.2d 1011, 1026 (D.C.Cir.1978) (articulating the "obvious limitations upon the capacity of courts to deal meaningfully with arcane areas of knowledge").

[15] Teledesic LLC v. FCC, 275 F.3d 75, 84 (D.C. Cir. 2001).

[16] Aeronautical Radio, Inc. v. FCC, 928 F.2d 428, 445 (D.C. Cir. 1991).

[17] Telocator Network of Am. v. FCC, 691 F.2d 525, 538 (D.C. Cir. 1982); Nat'l Ass'n of Broadcasters v. FCC, 740 F.2d 1190, 1209-14 (D.C. Cir. 1984) (upholding an FCC decision on fixed service relocation given that the Commission acted based on an evolving technological and factual background).

In crafting and implementing its rules for M-LMS, the Commission was acting exactly within its role as the nation's designated communications regulator. The Commission's *Order* explains in significant detail its interpretation and application of its M-LMS rules to Progeny's service and its decision to authorize Progeny to begin commercial operations. Because the Commission's *Order* "strikes a sensible policy balance and rests on a reasonable interpretation of the Commission's rules,"[18] its interpretation of those rules and its interpretation of the highly complex test results that formed the basis of that decision appropriately warrant the highest deference and no need exists for the Commission to reconsider its well-reasoned decision.

II. THE COMMISSION CLEARLY APPLIED ITS "UNACCEPTABLE LEVELS OF INTERFERENCE" STANDARD IN THE PROGENY ORDER

The Commission's June 6th *Order* exactingly applied to Progeny's position location service the Commission's long since established spectrum sharing requirements for M-LMS licensees. Several petitioners claim otherwise, charging that the Commission "changed the rules regarding an M-LMS licensee's showing and has failed to hold Progeny to the burden that the Commission's own rules placed on it."[19] For example, WISPA claims that the Commission's *Order* contains as many as "nine potential such new definitions" of the unacceptable levels of

[18] *Order*, ¶ 19.

[19] *See Coalition* at 7; *see also WISPA* at 1, 9-10, 12-13; *Silver Spring Networks* at 8-11 (claiming that "[i]nstead of inquiring whether Progeny's test results verify that interference to Part 15 operations will remain within acceptable levels, the Order systematically minimizes protection of Part 15 users").

interference standard.[20] The petitioners further claim that such a change in the rules is impermissible absent a notice and comment rulemaking process.[21]

The Coalition acknowledges, however, that the Commission clearly states in its *Order* that "[i]n evaluating Progeny's request, we implement the section 90.353(d) standard regarding 'unacceptable levels' of interference that the Commission established."[22] The *Order* also includes extensive discussion reciting the history of the standard and the Commission's original statements regarding its purpose and the technical showing that the standard requires.[23]

What then follows in the *Order* is not an effort to change the standard, but the Commission's detailed explanation as to why the extensive tests that were conducted demonstrate that Progeny satisfied the standard. The fact that the Commission provides multiple explanations regarding why Progeny satisfied its requirement (eight or nine, according to WISPA), does not evidence an effort to change the standard, but a comprehensive and thorough discussion as to why the standard was clearly met.

For example, WISPA cites to the following Commission statement, quoted in its entirety below, that

> [b]ased on the evidence before us, we find that the potential for increased interference within the 902-928 MHz band that could result from commercial operation of Progeny's M-LMS system will not create a significant detrimental effect overall on unlicensed operations in the band, and that the band therefore

[20] *WISPA* at 9.

[21] *Coalition* at 7-8; *see also WISPA* at 1, 10, 12-15 (claiming the Commission "unlawfully adopted a new standard that appears to represent *post hoc* reasoning to achieve a desired result, but one that violates the Administrative Procedure Act ("APA"), contravenes the requirements of Section 90.353(d) and is unsupported by the public record").

[22] *Coalition* at 10 (*quoting Order*, ¶ 43).

[23] *See Order*, ¶ 19.

> can continue to be used for such unlicensed operations consistent with their Part 15 status.[24]

WISPA claims that this statement establishes a new interference standard focused on "significant detrimental effect overall."[25] In fact, the quoted statement was intended to explain *why* Progeny has satisfied the unacceptable levels of interference standard, *i.e.*, because Progeny's service will not have a significant detrimental effect on Part 15 users, not to abrogate or impermissibly modify the standard. Despite this fact, the petitioners make a number of additional arguments claiming to raise question about whether the Commission applied the unacceptable levels of interference standard as required. As discussed below, each of these arguments is baseless.

A. The Unacceptable Levels of Interference Standard Does Not Provide a Greater Level of Protection Than the Commission's Harmful Interference Standard

Fundamental to the claim of several of the petitioners that the Commission altered its rules for M-LMS licensees is a misunderstanding regarding what the rules have always required. The Coalition asserts that the M-LMS rules were designed "to create a level of interference protection for 902-928 MHz unlicensed operations *greater* than the general Part 15 standard that requires unlicensed devices to accept harmful interference."[26]

This assertion is incorrect. As the Commission repeatedly explained when it imposed the unacceptable levels of interference requirement on M-LMS licensees, the underlying rules for Part 15 operations did not change. The *Order* explicitly reiterates that "unlicensed Part 15

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[24] *Order*, ¶ 21.

[25] *WISPA* at 10.

[26] *Coalition* at 8 (*emphasis added*); *see also WISPA* at 21 (asserting "Section 90.353(d) and the license conditions should afford Part 15 users in the 900 MHz band a higher level of protection from licensed users than would otherwise exist in order to give meaning to the 'unacceptable levels' phrase").

devices in the 902-928 MHz band, as in any other band, may not cause harmful interference to and must accept interference from all other operations in the band."[27] "Persons operating unlicensed Part 15 devices have no vested or recognizable right to continued use of any given frequency."[28]

The Coalition further argues in its petition that "[b]y wrapping the [unacceptable levels of interference] definition around the general Part 15 standard that devices must accept harmful interference, the Commission renders meaningless the term 'unacceptable interference' and removes the protections afforded unlicensed users in the 902-928 MHz band pursuant to Section 90.353(d)."[29] Silver Spring Networks makes a similar argument, asserting that the *Order* "waters that standard down by importing frequent reminders that 'unlicensed devices in the 902-928 MHz band operate under Part 15 rules that offer no protection from harmful interference.'"[30]

In making these arguments, the petitioners appear to claim that the Commission should have assessed Progeny's compliance with the unacceptable levels of interference standard in isolation without concurrently taking into consideration the fact that Part 15 devices must continue to accept harmful interference from M-LMS networks.

Such a narrow approach truly would have constituted a change in the Commission's rules given the Commission's repeated statements in its decisions during the 1990s that the adoption of its unacceptable levels of interference requirement was intended to create a balance with the

[27] Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, *Report and Order*, 10 FCC Rcd 4695, ¶ 35 (1995) ("*M-LMS Order*") (citing 47 C.F.R. § 15.5(b)).

[28] *Id.* (citing 47 C.F.R. § 15.5(a)).

[29] *Coalition* at 11.

[30] *Silver Spring Networks* at 8 (*quoting Order*, ¶ 19).

preexisting requirement that Part 15 devices must accept harmful interference. As the Commission explained in its 1995 order establishing the standard:

> we have decided to balance the equities and value of each use without undermining the established relationship between unlicensed operations and licensed services. Thus, we affirm that unlicensed Part 15 devices in the 902-928 MHz band, as in any other band, may not cause harmful interference to and must accept interference from all other operations in the band; persons operating unlicensed Part 15 devices have no vested or recognizable right to continued use of any given frequency.[31]

The Commission reaffirmed this goal of a balanced relationship a year later when it explained that the testing rules "do not modify our Part 15 rules by elevating the status of Part 15 providers, . . . Part 15 operations remain secondary; the testing requirement is merely an attempt to achieve the most efficient coexistence possible among the various users of the band."[32] Finally, the Commission explained in a third order issued still one year later, that the unacceptable levels of interference requirement

> does not mean that Part 15 devices are entitled to protection from interference. They are not. Rather, we were explaining our decision to place a testing condition on multilateration LMS licenses. The purpose of the testing condition is to insure that multilateration LMS licensees, when designing and constructing their systems, take into consideration a goal of minimizing interference to existing deployments or systems of Part 15 devices in their area, and to verify through cooperative testing that this goal has been served.[33]

Given the repeated and unwavering statements by the Commission for almost two decades that the unacceptable levels of interference standard and the harmful interference

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[31] *See M-LMS Order*, ¶ 35.

[32] Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, *Order on Reconsideration*, 11 FCC Rcd 16905, ¶ 17 (1996) ("*M-LMS Reconsideration Order"*).

[33] Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, *Memorandum Opinion and Order and Further Notice of Proposed Rule Making*, 12 FCC Rcd 13942, ¶ 69 (1997) ("*M-LMS MO&O*").

standard are inexorably intertwined for purposes of spectrum sharing in the 902-928 MHz band, the Commission had no choice but to consider the two standards together in its assessment of Progeny's compliance with the requirement. Any other approach clearly would have constituted an unexplained departure from the Commission's rules and testing requirements and, as the petitioners uniformly agree, would have been impermissible under the Administrative Procedure Act.

B. The Commission's Order is Clear in Explaining Why the Unacceptable Levels of Interference Standard Cannot be Reduced to a "Bright Line" Numerical Requirement

Several petitioners argue that the Commission erred in not initiating and completing another rulemaking prior to issuing its *Order* to further define the Commission's requirement that M-LMS licensees must demonstrate that they will not cause unacceptable levels of interference to Part 15 devices. Of course, identical arguments were made repeatedly during the proceeding leading up to the *Order*.[34] The Commission therefore, not surprisingly, addressed these arguments in the *Order*, explaining that "[n]or has the Commission ever determined technical criteria for evaluating interference to unlicensed devices, which operate on a non-protected basis."[35]

WISPA attempts to attach great mystery to this statement, which, because of its brevity, was apparently misinterpreted by the petitioner. WISPA speculates

> [d]id the Commission mean to say that it had previously intentionally rejected calls to define "unacceptable levels of interference," and would continue to do so? If so, then apparently there is no standard by which to evaluate M-LMS test results, seemingly leaving the Commission left to assess each interference test

[34] *See, e.g.*, Public Knowledge *Ex Parte*, WT Docket No. 11-49 (Mar. 11, 2013); GE Digital Energy *Ex Parte*, WT Docket No. 11-49 (Mar. 13, 2013).

[35] *Order*, ¶ 18.

> result on an *ad hoc* and *post hoc* basis, providing the public with no idea of what is required.[36]

Fortunately, the Commission anticipates and responds to WISPA question in the following paragraph of the *Order*, explaining

> [t]he Commission's intent with regard to field testing was not to create and apply a specific minimum standard of interference protection to all unlicensed devices operating in the 902-928 MHz band, but instead to ensure more broadly that the various types of unlicensed devices permitted under the Commission's Part 15 rules would continue to be able to operate in the band when potential interference from M-LMS was introduced.[37]

The Commission's decision to refrain from adopting specific minimum interference protection standards drew challenges from such petitioners as the Coalition, which criticized the Commission's *Order* as lacking "objective analysis" that "does not come to a technical conclusion as to how much of a reduction or how much of a time delay" constitutes unacceptable levels of interference.[38]

The Commission's *Order*, however, explains the reason why it would be inappropriate to establish specific minimum technical thresholds for assessing interference to Part 15 devices, observing that

> [t]o require this would elevate the status of Part 15 operations in the band and undermine the established relationship between licensed and unlicensed operations. Such an approach would effectively enable individual unlicensed operators to block the introduction of M-LMS on the basis of interference to their particular devices or models, or their particular systems or circumstances of operation, giving them greater rights against a licensed service than they have against other Part 15 operations in the band – a result that is fundamentally

[36] *WISPA* at 11.

[37] *Order*, ¶ 19.

[38] *Coalition* at 11, 15-16.

> inconsistent with the Commission's decision on the operating status of unlicensed devices in the band.[39]

In other words, once a specific maximum interference threshold is established for a secondary service, the service stops being secondary, instead enjoying enforceable spectrum rights against other parties. Thus, the Commission's decision (both in 1995 and today) to refrain from establishing specific interference protection rights for secondary spectrum users was consistent with the Commission's long standing policies for spectrum sharing between primary and secondary services.

C. The Commission Was Correct in Finding that the Design of the Progeny System Reduced the Potential for Interference to Part 15 Devices

The Coalition argues that the Commission "wrongly concludes that Progeny's system 'is designed in a manner that would reduce the number of transmissions'" and that Progeny's waiver "lowered the potential for interference from Progeny's operations."[40] Silver Spring Networks seems to express this same point, asserting that the appropriate question before the Commission "is whether Progeny's new design, *which does not comply with the terms of Progeny's license*, should nonetheless be permitted in a band that is already occupied by tens of millions of users who may suffer as a result."[41]

As a procedural matter, both of these arguments appear to be belated challenges to the Commission's decision to grant to Progeny two waivers of the Commission's M-LMS rules, the window for challenges to which closed more than a year ago. Apparently aware of this procedural infirmity, Silver Spring Networks makes a novel argument that the Commission's

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[39] *Order*, ¶ 19 (*internal citations omitted*).

[40] *Coalition* at 16 (*quoting Order*, ¶¶ 5, 13).

[41] *Silver Spring Networks* at 12.

decision regarding Progeny's compliance with section 90.353(d) of the rules "represents a continuation of Progeny's request for a waiver."[42] Silver Spring Networks acknowledges, however, that the *Limited Waiver Order* expressly did not waive the section 90.353(d) test requirement[43] and therefore Silver Spring Networks has no basis to claim that it can use the Commission's June 6th decision as a procedural vehicle to challenge the Commission's 2011 waiver decision.

In any event, the petitioners are clearly incorrect in claiming that the grant of two rule waivers to Progeny allowed it to increase, rather than reduce, the amount of interference that could be experienced by Part 15 spectrum users. First, the Coalition repeats previous arguments that, by seeking to provide position location services indoors, Progeny will necessarily require "more transmitters, and greater signal strength."[44] Progeny's ability to comprehensively track vehicular devices, however, requires the ability to operate in dense urban environments and parking garages, not simply on clear line-of-sight roadways. Further, as Progeny has explained in countless filings, Progeny's ability to provide services indoors and in dense urban areas comes from its use of a very low bit rate signal, which results in higher processing gain, enabling reception at greater distances and indoors without the need for additional transmitters.[45] In addition, Progeny's placement of transmitters primarily at high site locations surrounding communities, its abandonment of comparatively weak return link signals, and its use of a common broadcast signal instead of employing unique transmissions to every tracked device all

[42] *Id.* at 6.

[43] *Id*. at 7.

[44] *Coalition* at 16.

[45] *See, e.g.*, Letter from Bruce A. Olcott, Counsel to Progeny LMS, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, at 3 (Jan. 27, 2012).

served to reduce substantially the number of transmitters that would be required and concurrently the potential for interference to Part 15 devices. The Commission's conclusions in this regard were therefore fully supported by the record.

The Coalition also asserts that "the undisputed results of cooperative testing show that the Progeny signal is 'seen' 80% of the time."[46] Of course, Progeny *did* dispute this claim and the Commission was correct in concluding that Progeny's presentation of the facts, which was buttressed by the joint test results, was accurate. Specifically, the only time that a Part 15 device can detect the signals of a substantial number of Progeny transmitters is when the Part 15 receiver is placed on a tall pole with line-of-sight to multiple Progeny transmitter locations. The overwhelming majority of Part 15 devices are never used in such extreme conditions and therefore the Commission was fully justified in concluding that "[e]ach beacon in the Progeny network will not be transmitting continuously, thus providing opportunities for other spectrum users to access the spectrum."[47]

It should also be noted that the Commission's rules for M-LMS do not require licensees to employ any duty cycle at all. Thus, the fact that Progeny employed a very short duty cycle is further evidence of its efforts to minimize the potential for interference to Part 15 devices.

Further, the Coalition's claim that the Commission erred in concluding that the design of Progeny's system helps to minimize interference completely ignores the Commission's observation that Progeny's use of a broadcast-only network architecture "eliminates potential interference to Part 15 devices from the M-LMS mobile transmissions that could have resulted

[46] *Coalition* at 16.

[47] *Order*, ¶ 23.

from the two-way transmissions originally authorized under the rules."[48] Given that Progeny's abandonment of two-way capabilities was the single-most important measure that Progeny undertook to minimize interference, the Coalition's failure to even acknowledge this fact effectively guts the Coalition's claim that the Commission erred in concluding that Progeny's network design was very effective in facilitating spectrum sharing in the 902-928 MHz band.

D. The Commission's Decision Was Based on the Joint Test Results, Not Just on the Highly Compatible Design of the Progeny Network

The Coalition further claims that the Commission's *Order* "repeatedly and erroneously focuses on the design of Progeny's system, rather than the actual effects of that design on the interference environment."[49] The Coalition, however, immediately undercuts this argument by acknowledging that the Commission directed M-LMS licensees to "take into consideration a goal of minimizing interference to existing deployments or systems of Part 15 devices in their area, and to verify through cooperative testing that this goal has been served."[50] Thus, in order to follow its own guidance, the Commission was required to give consideration to whether Progeny undertook efforts in the design of its system to minimize interference to Part 15 devices.

The Coalition, however, claims that the Commission "looked only at the efforts Progeny made in designing its system" and "ignored" the test results.[51] Silver Spring Networks also makes this claim, asserting that the Commission "evidently paid almost no attention to the test

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[48] *Id.* (*citing* Request by Progeny LMS, LLC for Waiver of Certain Multilateration Location and Monitoring Service Rules, WT Docket No. 11-49, *Order* (DA 11-2036), 26 FCC Rcd 16878, 16889, 16884-16885 ¶¶ 14-19 (WTB/OET, rel. Dec. 20, 2011) ("*Limited Waiver Order*")).

[49] *Coalition* at 14.

[50] *M-LMS MO&O*, ¶ 69; *see also Coalition* at 14 (paraphrasing this language).

[51] *Coalition* at 14-15.

data submitted by Progeny."[52] Further, Warren Havens argues that the Commission's *Order* lacked reasoned decisionmaking because it focused solely on Progeny's efforts to design its network with the goal of minimizing interference to Part 15 devices, and not on the requirement for Progeny to actually demonstrate that unacceptable levels of interference will not occur.[53]

Each of these arguments overtly ignores the Commission's specific statements, analysis, and findings in the *Order*. Granted, a portion of the discussion of the *Order* first catalogs the significant efforts that Progeny undertook to design its network in a manner that would greatly reduce the potential for interference to Part 15 devices.[54] The Commission's *Order* then describes the details of the joint and independent test processes[55] and subsequently engages in a lengthy discussion regarding the Commission's analysis and conclusions resulting from its comprehensive review of the test data.[56] The Commission's *Order* details these findings separately for each major type of Part 15 device technology and for numerous different types of Part 15 device applications. Given the length and scope of this analysis, the petitioners have no basis to claim that the Commission either ignored or gave insufficient attention to the test data.

E. The Fact that Progeny Was Initially Forced to Unilaterally Conduct Independent Tests is Irrelevant to the Commission's Decision

Several petitioners focus significantly on the fact that, prior to conducting joint tests with several Part 15 device manufacturers and users, Progeny's initial tests were conducted by an

[52] *Silver Spring Networks* at 14.

[53] *Havens* at 6-9.

[54] *See Order*, ¶¶ 13-14, 23.

[55] *See id.*, ¶ 17.

[56] *See id.*, ¶ 21, 24-28.

independent third party. For example, Plantronics argues that "Progeny made no apparent effort to permit any Part 15 stakeholder to observe or participate in [the independent] testing."[57]

In fact, as the record clearly reflects, Progeny originally tried to persuade Itron, a major Part 15 manufacturer and frequent commenter in Part 15 dockets, to participate in its initial tests, but Itron refused.[58] It was only after Progeny completed its independent tests and the Commission placed them on public notice for comment that Itron and two other parties agreed to initiate a joint test process.

Further, contrary to the arguments of the petitioners,[59] the completion of joint tests was always characterized by the Commission as advisable, but not required. In its 1995 *M-LMS Order*, the Commission expressed an "expectation" that Part 15 testing would be conducted in close cooperation between M-LMS licensees and operators of Part 15 systems.[60] The Commission further explained in its 1996 *M-LMS Reconsideration Order* that close cooperation would be "the more prudent course of action."[61] The Commission, however, did not include this guidance in its rules for M-LMS licensees,[62] or as a specific condition of its 2011 grant of

[57] *Plantronics* at 6; *see also Coalition* at 5; *WISPA* at 5.

[58] See Letter from Henry Goldberg, Attorney for Intron, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, at 2 (May 1, 2012) (acknowledging that Itron declined repeated requests from Progeny to engaging in joint testing).

[59] *See Coalition* at 4-5 (arguing that "the Commission squarely imposed two requirements on M-LMS licensees as a condition of their licenses" and the first of these was "to engage in cooperative field testing").

[60] *M-LMS Order*, ¶ 82.

[61] *M-LMS Reconsideration Order* at 16911-16912.

[62] *See* 47 C.F.R. § 90.353(d). The rule states in relevant part: "[a]dditionally, EA multilateration LMS licensees will be conditioned upon the licensee's ability to demonstrate through actual field tests that their systems do not cause unacceptable levels of interference to 47 CFR part 15 devices." *Id.*

waivers to Progeny.[63] Therefore, despite the claims of some petitioners, the use of cooperative testing does not constitute a binding rule that would require the grant of a waiver by the Commission to forgo.

This said, Progeny obviously did conduct cooperative joint testing with manufacturers and users of Part 15 devices, and the Commission relied on the results of those tests to determine that Progeny's service will not cause unacceptable levels of interference to Part 15 devices. Therefore, arguments regarding Progeny's initial round of independent testing are irrelevant and were appropriately disregarded by the Commission.

Several parties, however, claim that, following Progeny's independent tests, the Commission should have issued a public notice inviting additional participants in Progeny's joint test process. One of the parties that made this argument, the Coalition,[64] was clearly already aware that Progeny was going to undertake additional tests given the fact that three of the Coalition's founding members participated in the joint test process. The other party that raised this issue, Plantronics, not only argued that the Commission should have issued a public notice, but that such notice should have been published in the Federal Register.[65]

In making this argument, Plantronics disregards the fact that the Commission already had issued multiple public notices regarding the development of Progeny's network (including the grant of two waivers and the completion of independent tests) and none of them prompted Plantronics to file comments or otherwise engage in the proceeding before the Commission. Therefore, it does not appear credible that a third public notice would have made any difference.

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[63] *See Limited Waiver Order*, ¶¶ 29 and 35.

[64] *Coalition* at 5.

[65] *See Plantronics* at 7 n.17 (arguing that without Federal Register publication, the Commission failed to provide "meaningful notice to parties that potentially would be affected").

Further, the fact that neither of the public notices was published in the Federal Register is irrelevant. The vast majority of FCC public notices are never published in the Federal Register and they are no less binding.

F. Considered in Their Entirety, the Multiple Rounds of Joint and Independent Testing That Were Conducted Were Clearly Adequate to Support the Commission's Determination That Progeny's Network Would Not Cause Unacceptable Levels of Interference

As the Commission's *Order* correctly observes, during a period of several years, Progeny conducted multiple rounds of joint and independent field tests that resulted in the submission of four sets of field test results to the Commission.[66] All of these field test reports were placed on public notice for comment. Throughout this process, conspicuously absent from the comment process was one of the parties that filed a petition for reconsideration of the Commission's *Order*, Silver Spring Networks. Silver Spring Networks fails to explain, as required by the Commission's rules, why it should be entitled to maintain such a petition even though it failed to make any filing or submission to the Commission in this proceeding prior to the issuance of the Commission's *Order*.[67] The Commission should therefore summarily dismiss the Silver Spring Networks petition as procedurally defective.

In its petition, Silver Spring Networks makes numerous wholly unsupported (and unsupportable) claims about the joint and independent test process, starting with an argument

[66] *Order*, ¶ 17.

[67] *See* 47 C.F.R. § 1.106(b)(1) (requiring petitioners that were not parties to the prior proceeding to show "good reason why it was not possible for him to participate in the earlier stages of the proceeding.")

that the four rounds of joint and independent tests "can scarcely be considered 'actual field tests.'"[68] Silver Spring Networks goes on to claim that Progeny:

- "refus[ed] to test under real-world conditions"[69] (even though Progeny permitted Itron, Landis-Gyr and WISPA to select the test conditions),
- refused to test "in an adequate testing location"[70] (even though Santa Clara County was optimal for tests using a wide variety of test conditions),
- chose "poor test parameters such as limiting the number and type of Part 15 devices tested"[71] (even though Progeny permitted Itron, Landis-Gyr, and WISPA to select the type and number of Part 15 devices that were used in the joint tests),
- failed to address "potential 'worst case' scenarios"[72] (even though both worst case and break case conditions were employed in the tests, including worst case conditions that were selected by Itron, Landis-Gyr and WISPA for the joint tests),
- and provided "interpretation of the test results that does not reflect the actual interference experienced by the tested devices"[73] (even though Progeny is the only party to this proceeding that has consistently cited to specific sections and figures of the Joint Test Reports to support its positions).

[68] *Silver Spring Networks* at 14.

[69] *Id.*

[70] *Id.*

[71] *Id.*

[72] *Id.*

[73] *Id.*

Given the abundance of unsupported allegations that are included in the Silver Spring Networks petition, one might wonder as to the source of Silver Spring Networks' technical analysis. According to the Silver Spring Networks petition, each of its above listed allegations was previously made by the Utility Telecom Council ("UTC") in reply comments it filed on January 11, 2013.[74] Further, Silver Spring Networks acknowledges in its petition that UTC's allegations were not based on UTC's own analysis of the test results, but were instead based on UTC's "collecting comments [filed by others] pointing out the flaws in Progeny's test protocol, results, and conclusions."[75]

In other words, Silver Spring Networks got its arguments from UTC, and UTC got its arguments from other third parties. This ongoing thread of unsupported hearsay highlights a major problem that has persisted throughout this proceeding. One party will make an allegation, which Progeny will convincingly refute using technical analysis and citations to the joint and independent test results. The alleging party may then concede the point (such as by refraining from arguing the point further), but other parties may repeat the original argument as fact, which may then be repeated further by other third parties until the argument becomes, in the words of Silver Spring Networks, "well-documented in the record."[76]

Given Silver Spring Networks' apparent failure to review the test results and provide its own analysis of their findings, or to verify the validity of arguments that it borrows from others, it is remarkable that Silver Spring Networks accuses the Commission of "barely even

[74] *See id.* (citing Reply Comments of the Utilities Telecom Council, WT Docket No. 11-49 (Jan. 11, 2013)).

[75] *Id.* at 14, n.33.

[76] *Id.* at 14.

mention[ing] the results of Progeny's 'actual field tests' in its *Order*."[77] As discussed in prior and subsequent sections of this opposition, the Commission's *Order* includes significant discussion regarding the results of the test process and provides detailed analysis regarding the application of the test results to the legal standard at issue. Given this substantial disconnect between the harsh tone of Silver Spring Networks' arguments and its lack of analysis into the test results themselves, the Commission should give significant consideration to dismissing Silver Spring Networks' petition as violating the requirement that a party that did not participate in the original proceeding before the Commission must convincing explain in its petition why its prior participation was not possible.[78]

III. THE COMMISSION FULLY AND ADEQUATELY CONSIDERED THE SPECTRUM SHARING CAPABILITIES OF PROGENY'S M-LMS NETWORK WITH SCADA SYSTEMS USED BY UTILITIES

Several utility trade associations jointly argue that the Commission "acted arbitrarily by ignoring the impact of interference from Progeny's operation on the Part 15 SCADA systems used by utilities."[79] Other petitioners argued that Progeny conducted inadequate testing with unlicensed SCADA equipment.[80] In fact, the Commission's *Order* specifically discussed the potential impact of Progeny's service on unlicensed SCADA systems, explaining

> [t]he tests on frequency hopping spread spectrum devices (such as those used by AMR systems, Supervisory Control and Data Acquisition (SCADA) systems, and various alarm systems), show that in some instances there can be some reduction

[77] *Id.* 8.

[78] 47 C.F.R. § 1.106(b)(1).

[79] *Utility Trade Associations* at 5.

[80] *See Coalition* at 12-13 (arguing that SCADA systems differ greatly from meter-reading devices, which "retransmit the same message more often"); *see also Silver Spring Networks* at 16.

> in the percentage of data packets successfully transmitted at a particular instant in time, but that the data packets get through over time because these devices are designed to operate on multiple channels and re-transmit as needed.[81]

The Utility Trade Associations nonetheless make several arguments as to why they believe Progeny's service may cause unacceptable levels of interference to Part 15 SCADA systems. As discussed below, each of these arguments lack any technical basis and is repetitive with prior arguments that have been rejected by the Commission.

First, the Utility Trade Associations claim that Progeny's test operations in Santa Clara County actually did result in interference on two occasions to Part 15 utility systems. The first occasion highlighted by the Utility Trade Associations involved interference to a SCADA receiver operated by PG&E. The PG&E SCADA device, however, was a Part 90 device (not Part 15) that operates outside of the 902-928 MHz band. Progeny and PG&E quickly determined that the source of the interference was the inadvertent placement of a Progeny transmitter directly adjacent to the PG&E receiver on the same tower. Progeny responded by immediately turning off its transmitter and subsequently moving it to a point below the SCADA device on the same tower, which fully resolved the interference concern.[82] The Utility Trade Associations misleadingly claims that it took nearly four months to resolve the issue with PG&E.[83] In fact, Progeny shut down its transmitter immediately upon being advised of the intermittent errors and what required several additional months was the scheduling of an opportunity to reinstall the Progeny transmitter at another location on the tower before it could be turned back on. It is also

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[81] *Order*, ¶ 25.

[82] *See Utility Trade Associations* at 6. The Utility Trade Associations further claim that the incident "required PG&E to place Progeny's device" at another location on the tower. *Id.* Obviously, Progeny itself undertook this shift in placement.

[83] *See id.* at 9.

notable that both the Progeny and PG&E engineers agreed that a movement of as little as ten feet in antenna placement would be sufficient to resolve any problems.

The second situation highlighted by the Utility Trade Associations does not even represent a claim of interference to any operating Part 15 system, but instead involves claims by an Australian equipment manufacturer, Taggle Systems, that a Part 15 meter reading device it designed for use in Australia exhibited relatively low performance during an internal company test in Santa Clara County.[84] Progeny promptly responded with a technical analysis noting that the poor performance experienced by the Taggle device resulted from the significantly higher noise floor at the test location in Santa Clara County as compared with Taggle's stated "desired" noise floor level, and not from the presence of Progeny's network.[85] Although Taggle disputed Progeny's findings, it never provided any technical analysis to support its position.[86] Therefore, no basis exists for the Utility Trade Associations to claim that either the PG&E or the Taggle situation provide any foundation for its allegation that Progeny's service has caused unacceptable levels of interference to utility SCADA systems.

Second, the Utility Trade Associations argue that the joint tests that Progeny conducted with utility device manufacturers demonstrate that Progeny's service "will render smart meters

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[84] *See Coalition* at 18 (*citing* Letter from Gordon Foster and Chris Andrews, Taggle Systems, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 11-49 at 2-3 (filed Feb. 2013)).

[85] Letter from Bruce A. Olcott, Counsel to Progeny LMS, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 11-49, at 1-4 (Mar. 22, 2013) (explaining that the -105 dBm noise floor that Taggle assumes as "typical" for its performance expectations is up to 25 dB below the noise floor that can be expected in much of the United States).

[86] Letter from Gordon Foyster and Chris Andrews, Taggle Systems, to Marlene H. Dortch, Secretary, Federal Communications Commission, at 1 (April 15, 2013) (declining to "engage in a back-and-forth exchange regarding the technical merits of what Taggle Systems measured").

and other Part 15 devices within close proximity to Progeny's high power beacon transmitters *unusable*."[87] The Utility Trade Associations, however, fail to provide any technical analysis of the test results to support this sweeping claim and also fail to cite to any such technical analysis in the record (citing instead to similar unsupported claims made previously by GE Digital Energy). Therefore, the Utility Trade Associations are simply repeating baseless claims that were previously considered and rejected by the Commission. It would therefore be inappropriate for the Commission to reconsider its decision based on the Utility Trade Associations' arguments.[88]

Third, the Utility Trade Associations argue that Progeny did not conduct joint tests with a sufficient cross-section of utility telemetry equipment.[89] In fact, Progeny conducted joint testing with two major manufacturers of SCADA and other utility communications equipment. Although the devices employed in these tests were designed for automatic meter reading, they employed not only the same modulation and transmission approaches, but in fact, some of the same transmitters and receivers that are used in SCADA equipment. Further, the technical design and performance capabilities of SCADA communications equipment are generally much more robust than the equipment used for meter reading. Therefore, the Commission was fully justified in concluding that the extensive tests that have already been conducted on various Part 15 devices were adequate to assess the spectrum sharing capabilities of Progeny's M-LMS network with unlicensed SCADA communications equipment.

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[87] *Utility Trade Associations* at 6.

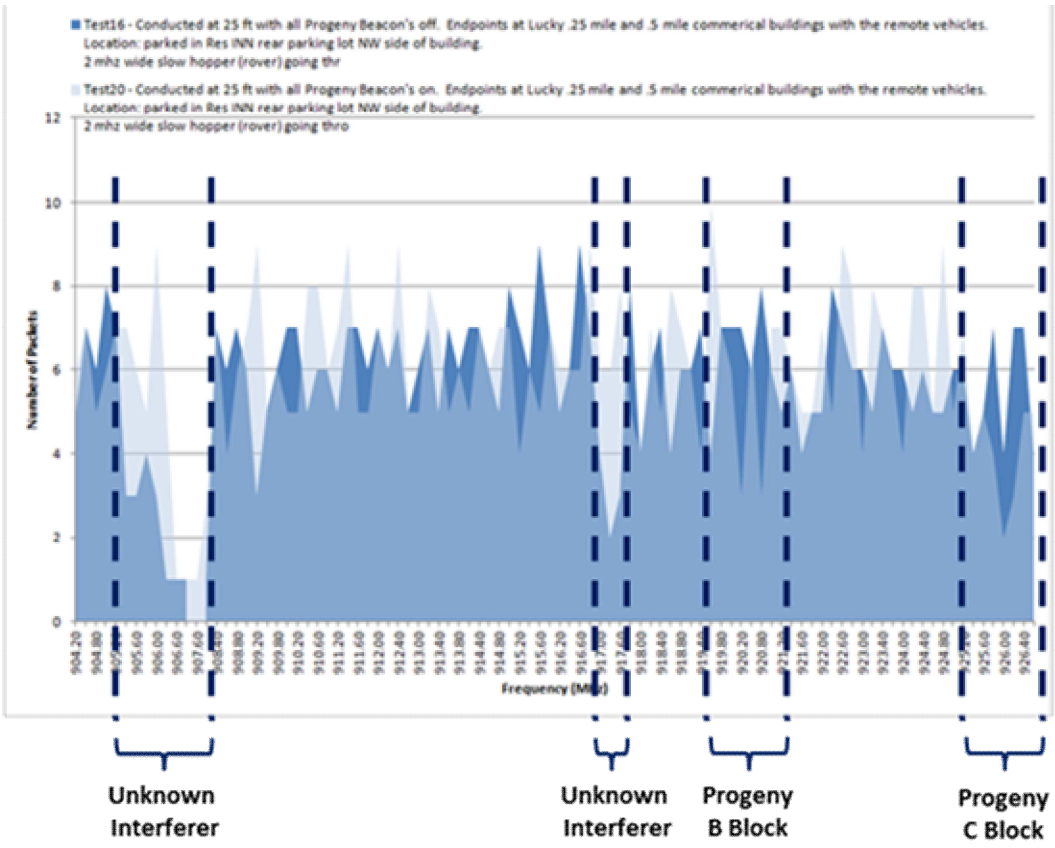
[88] 47 C.F.R. § 1.106(p)(3) (permitting dismissal of petitions for reconsideration that "rely on arguments that have been fully considered and rejected by the Commission within the same proceeding").

[89] *Utility Trade Associations* at 9-10.

Fourth, the Utility Trade Associations argue that unlicensed SCADA systems require a higher level of interference protection than most Part 15 devices because they are used for critical communications that must operate "with latencies *in the order of milliseconds*" and therefore cannot rely on the signal re-transmission capabilities that are used by many Part 15 devices to recover lost data packets.[90] Regardless of whether they achieve their low latency and high transmission reliability through the use of signal retransmission, sequential or simultaneous transmissions on multiple frequencies, or other common Part 15 interference mitigation approaches, the simple fact is that the joints tests have proven that the same mitigation techniques required to deal effectively with the interference provided by other Part 15 devices are effective as well in the presence of Progeny's network signals.

To demonstrate this fact, reference is needed only to a single figure from the joint test results, a figure resulting from ON/OFF testing that was conducted by Itron with the Progeny network in Santa Clara County in July 2012. The dark blue areas in the figure below illustrate Itron's throughput success rate on each frequency channel with Progeny's network turned off and the light blue illustrates Itron's throughput success rate on each frequency channel with Progeny's network turned on. As is evident, Itron's devices continued to transmit and receive data on channels that were directly co-frequency with Progeny's M-LMS beacons. Importantly, the figure also shows that Itron's equipment withstood the effects of Progeny's M-LMS beacon signals much better than it withstood the effects of other unidentified interference sources already operating around 906 and 917 MHz.

[90] *Id.* at 8.



Itron Test 16 and Test 20 (25 ft. Antenna Ht.)

Although strong Part 15 interference sources do not exist in all locations, the unknown interference sources that were identified in the above test were not anomalies – relatively loud transmissions from existing spectrum uses in the 902-928 MHz band are abundant, easy to identify, and a fact of daily life for any Part 15 operator. Further, the unknown interferers in this instance appeared to be operating continuously or near continuously, unlike Progeny's service, which operates with a duty cycle of no more than 20 percent.

What this means for the utility industry is clear – any Part 15 SCADA monitoring network that is able to operate successfully today in the 902-928 MHz band with very high reliability and millisecond latency *can continue to do so* in the presence of Progeny's network. Further, utilities will be able to continue to operate in this manner usually without any adjustments to their networks or manner of operation.

Despite this fact, the Utility Trade Associations take the wholly unjustified position of claiming that they may be forced to replace millions of unlicensed SCADA devices in order to address unacceptable levels of interference from Progeny's network.[91] Although the Commission acknowledged in its *Order* that some Part 15 device types may have to be replaced, the Commission was explicitly referring to devices that transmit and receive on a single frequency and are incapable of tuning to different frequencies.[92] The utility industry has never claimed that the SCADA devices it employs to maintain highly reliable communications have such limited operational capabilities and none of the devices that Progeny has identified are so constrained. Therefore, the Utility Trade Associations' protestations regarding possible equipment replacement costs constitute unsupportable and inflammatory rhetoric that the Commission should continue to disregard as lacking any technical or factual basis. Instead, the record clearly shows that SCADA communications equipment used by utilities can operate in the 902-928 MHz band in the presence of Progeny's service with the relative levels of reliability and low latency that it maintains today.

IV. THE COMMISSION WAS CORRECT IN CONCLUDING THAT PROGENY'S SERVICE WILL NOT CAUSE UNACCEPTABLE LEVELS OF INTERFERENCE TO WIRELESS BROADBAND NETWORKS

WISPA argues in its petition that the Commission erred in concluding that the level of interference that broadband wireless access systems sometimes experienced during joint tests in the presence of the Progeny network did not constitute unacceptable levels of interference.[93] Each of WISPA's arguments in this regard is identical to arguments that WISPA made in

[91] *Id.* at 6-7.

[92] *Order*, ¶ 28.

[93] *WISPA* at 14.

numerous pleadings and *ex parte* presentations that were filed in the voluminous record of this proceeding. Pursuant to the Commission's procedural rules, the Commission would therefore be justified in conserving its administrative resources by summarily rejecting these arguments as repetitious.[94] Nevertheless, Progeny addresses WISPA's arguments herein.

WISPA first claims that "the Joint Test Report shows that operation of Progeny's network causes co-frequency interference to WISP operations, resulting in a 50 percent reduction in throughput on the 'two most commonly used' fixed wireless broadband equipment."[95] WISPA argues that a 50 percent reduction must constitute unacceptable levels of interference.[96]

In making this argument, WISPA ignores the fact that most of the other co-frequency WISP tests that were conducted in the presence of Progeny's network evidenced far lower levels of throughput reduction (starting as low as 2.5 percent and more commonly around 8.3, 13.2, 14.9, and 17.6 percent).[97] The question is not whether a Part 15 operator is able to configure its technology in a manner to achieve the worst outcome possible, i.e. maximum interference, but whether the operator, using the normal operational and technical interference mitigation techniques it uses to avoid other Part 15 interference sources, can reasonably configure its technology in a manner to avoid or minimize interference potential.

WISPA attempts to draw attention away from the relatively modest throughput reductions of various co-channel configurations that were documented in the joint tests by creating fictitious statistics that combine reduction percentages in both the inbound and outbound

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[94] *See* 47 C.F.R. § 1.106(p)(3).

[95] *WISPA* at 14.

[96] *See id.*

[97] *See WISPA* at 42 (providing table that shows modest data throughput reductions in frequencies overlapping partially and entirely with Progeny's service).

direction,[98] effectively aggregating the numerator while failing to double the denominator. WISPA's invalid test statistics have been widely cited by other petitioners,[99] even though they are based on an impossible total data transfer rate of 200 percent. Remarkably, WISPA claims in its petition that "Progeny has not questioned" its false characterization of the test results,[100] but then acknowledges in a footnote that WISPA and Progeny "disagree" about whether it is appropriate for WISPA to aggregate percentages in this manner.[101]

Next, WISPA incorrectly argues that Progeny's service will "preclude" broadband wireless access operations in as much as two-thirds of the 902-928 MHz band.[102] WISPA's claim cannot be squared with the facts. First, WISPA ignores the numerous tests that showed that broadband wireless access networks can routinely operate in spectrum that overlaps both directly and partially with Progeny's network.[103] Second, WISPA claims that WISP networks are channelized to operate in only three channels in the 902-928 MHz band, only one of which, WISPA claims, is below the frequencies used for Progeny's service.[104] In fact, as Progeny

[98] *Id.* at 6 (referring to its aggregated results as "Overall" data throughput reductions).

[99] *See, e.g., Coalition* at 6 (repeatedly claiming that one test of a WISP device recorded transmission degradation of up to 60 percent).

[100] *WISPA* at 6.

[101] *Id.* at 6, n.22.

[102] *Id.* at 15; *see also Coalition* at 6 (making this same argument).

[103] *See WISPA* at 6 (providing table that shows modest data throughput reductions in frequencies overlapping partially and entirely with Progeny's service).

[104] *Id.* at 15.

documented, the tested WISP devices each operate with numerous different channelization options, at least half of which *do not overlap at all* with Progeny's licensed spectrum.[105]

Given these facts, the Commission was fully justified in finding that, based on its technical analysis of the joint test results, it was appropriate to conclude that Progeny's service would not cause unacceptable levels of interference to wireless broadband access systems. In reaching this conclusion, the *Order* acknowledges that the joint tests conducted with WISP devices "show varying results but also continued functionality."[106] The *Order* further notes that the significant variations in throughput reduction evidenced in the test results depended in part "on the specific circumstances of the WISP communication link(s) and physical relationship to Progeny's transmitters, and altering these specific circumstances and relationship to Progeny's transmitters in order to address possible interference problems should be manageable in most instances."[107]

WISPA takes umbrage both with the Commission's above reference to "functionality" and with the suggestion that WISP networks can employ "manageable" alterations to ensure their ability to operate in the presence of Progeny's network.[108] First, WISPA argues that the

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[105] *See* Letter from Bruce A. Olcott, Counsel to Progeny LMS, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 11-49 (March 28, 2012) (providing a detailed discussion of the channelization capabilities of the tested broadband wireless access devices).

[106] *Order*, ¶ 26.

[107] *Id.*

[108] WISPA also challenges the statement in the *Order* that "the worst-case scenarios occurred when WISP antennas were in close proximity to Progeny's beacons." *Order*, ¶ 26. Although WISPA claims that this is incorrect, *WISPA* at 18, the fact is that the single worst test result (the 49 percent throughput reduction) occurred when a Canopy access point was set to transmit to a subscriber module using the 923 MHz center frequency and that Canopy access point was placed closer to the Progeny beacons than any of the other WISP equipment tested. *See* Progeny & WISPA Part 15 Test Report, WT Docket No. 11-49, at 8 and 18 (filed Oct. 31, 2012).

Commission's unacceptable levels of interference standard requires more than the ability for Part 15 devices to continue to function.[109] Given the fact that the Commission never makes such a claim with respect to WISP devices, addressing this argument is unnecessary.[110]

Second, WISPA claims that WISP operators will be unable to employ the adjustments that may be necessary to facilitate WISP operations in the presence of Progeny's service.[111] These arguments, however, are dependent on WISPA's discredited claims that WISP networks will be unable to operate in the same frequencies with Progeny's service (WISPA mischaracterizes it as an "eviction")[112] and that the limited channelization capabilities of WISP equipment will isolate WISPs to only a single channel in the lower third of the 902-928 MHz band.[113] Given the fact that both these arguments were demonstrated as false, the Commission was fully justified in rejecting them through the issuance of its *Order* and the Commission should continue to do so on reconsideration.

V. THE VALIDITY OF THE COMMISSION'S DECISION WAS SUPPORTED BY PROGENY'S ACTUAL OPERATIONS IN THE SAN FRANCISCO BAY AREA AND OTHER MAJOR CITIES WITHOUT RESULTING IN UNACCEPTABLE LEVELS OF INTERFERENCE TO PART 15 DEVICES

The legal standard to determine Progeny's compliance with Section 90.353(d) of the Commission's rules is clear – Progeny must demonstrate through actual field tests that its M-

[109] *WISPA* at 15.

[110] The *Order* does acknowledge that some Part 15 devices that were designed with very limited spectrum sharing capabilities may in fact be unable to function in the presence of Progeny's service and may require replacement. *Order*, ¶¶ 27-28.

[111] *WISPA* at 15-16.

[112] *Id.* at 20.

[113] *Id.* at 15-16.

LMS network will not cause unacceptable levels of interference to Part 15 devices. As the Commission's *Order* correctly concludes, the extensive joint and independent tests that were conducted by Progeny satisfy this requirement.

As additional support for this central finding, the Commission noted the extensive and lengthy operations that Progeny undertook in major cities in the United States without resulting in unacceptable levels of interference to Part 15 devices. As the *Order* notes, "Progeny has deployed and operated its M-LMS network in the San Jose, California, area for the past three years, and has commenced initial deployment and operation of networks in 39 other Economic Areas across the country over the past several months."[114]

The Coalition attempts to quibble with the *Order*'s observations arguing that, although Progeny's San Jose, California network transmitted in Progeny's C-block spectrum for more than three years, the network transmitted in both Progeny's C-block and B-block spectrum for "just" two years.[115] The Coalition also repeats the unsupported claims of Itron that the operation of Progeny's network in San Jose, California may not have been without occasional interruption for technical upgrades.[116] Progeny has responded by noting that, for lengthy periods of time, Progeny's M-LMS network in Santa Clara County actually operated at 300 Watts ERP, rather than 30 Watts ERP.[117] Thus, there was ample and abundant opportunity to observe and

[114] *See Order*, ¶ 16 (*citing* Letter from Bruce A. Olcott, Counsel to Progeny LMS, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, *Ex Parte*, WT Docket No. 11-49 (Mar. 21, 2013), Slide at 13).

[115] *Coalition* at 17.

[116] *Id*.

[117] Letter from Bruce A. Olcott, Counsel to Progeny LMS, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, *Ex Parte*, WT Docket No. 11-49 at 2 (Feb. 19, 2013).

document in real life conditions the potential and 'greater-than worst case' impact of Progeny's M-LMS network on Part 15 devices in Santa Clara County.

The Commission's *Order* thus appropriately, and conservatively, observes "[t]o date, we have not received interference complaints that suggest that Progeny's system is causing any significant impact upon Part 15 operations in the 902-928 MHz band."[118] Importantly, the Commission did not claim that it received no interference complaints involving Part 15 devices (even though Progeny continues to believe that this is the case); the Commission only said that it had not received complaints that suggest that Progeny's network is causing "any significant impact" on Part 15 operations.[119]

The Coalition nonetheless identifies the Commission's conservative observation as another mistaken claim "that is not accurate."[120] Specifically, the Coalition identifies three situations in which a party claimed that interference may have been caused by Progeny's network to a Part 15 device. Two of these situations were already discussed above in a prior section of this opposition – the PG&E SCADA device, which was actually a Part 90 device and not a Part 15 device, and a manufacturer test (not commercial operation) of the Taggle automated meter reading device, which performed below expectations because of the elevated noise floor in the San Francisco Bay Area, not because of Progeny's network. The third situation identified by the Coalition involved a user of Plantronics wireless headsets, which had noted audio breakups on certain channels that Plantronics suggests may have been attributable to Progeny's network. Progeny addresses the performance of the Plantronics equipment in the presence of Progeny's

[118] *Order*, ¶ 16.

[119] *Id.*

[120] *Coalition* at 18.

service in a subsequent section of this opposition and will refrain from repeating those arguments here.

Importantly for these purposes, none of these three situations brings into question the Commission's underlying conclusion in its *Order*. Specifically, any interference complaints that may have resulted from Progeny's operation of its network for three years in the San Francisco Bay Area and for more than a year in 39 other major Economic Areas were sufficiently minor for the Commission to conclude that Progeny's system is not "causing any significant impact upon Part 15 operations in the 902-928 MHz band."[121]

VI. THE COMMISSION DID NOT NEED TO REQUIRE PROGENY TO CONDUCT TESTING WITH EVEN MORE PART 15 DEVICES

The Coalition argues in its petition that the Commission erred in not requiring Progeny to conduct even more joint testing with Part 15 devices. The Coalition asserts "the Commission has not articulated any reason for not requiring additional testing."[122] Of course, the Coalition is incorrect on this point. As reflected in the *Order*, the Commission concluded that the four rounds of joint and independent testing that were conducted by Progeny with Part 15 devices was adequate and further testing was unnecessary because the extensive testing already conducted involved "an appropriately representative cross-section of Part 15 devices and systems that operate in the 902-928 MHz band."[123] The Commission further explained that:

> none of the commenters have shown that the additional devices for which they request testing are significantly different in technology from the previously tested devices, so testing these additional devices is unlikely to provide additional

[121] *Order*, ¶ 16.

[122] *Coalition* at 12.

[123] *Order*, ¶ 21; *see also Coalition* at 11 (*quoting same*).

> information pertinent to determining the potential of the Progeny system to cause unacceptable levels of interference.[124]

Reversing direction, the Coalition acknowledges that the Commission explained its analysis and reasoning in the *Order* and alternatively asserts that the Commission's stated conclusion was incorrect.[125] In doing so, the Coalition and several of its members repeat technical arguments that were extensively considered in the countless comments and *ex parte* presentations that were filed during the lengthy proceeding and, as discussed further below, the petitioners' most recent recitations of these arguments add nothing to the comprehensive record in this proceeding.

The Coalition also acknowledges the Commission's observation that the testing process cannot be allowed to go on forever.[126] As the Commission explained

> [t]esting more than a representative sample of unlicensed devices based on requests for testing of individual, but often similar devices could result in endless rounds of field tests and endless delays of commercial M-LMS deployment. Such testing would also effectively elevate unlicensed users to a form of interference protection that well exceeds their Part 15 status.[127]

Rather than give this observation the serious consideration that it is due, the Coalition disparagingly refers to the Commission's statement as a "straw man argument" and retorts "because of the impossibility of testing all devices" the Commission concluded that "it should rely on what Progeny unilaterally decided to test."[128]

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[124] *Order*, ¶ 22.

[125] *See Coalition* at 11.

[126] *See id.*

[127] *Order*, ¶ 22.

[128] *Coalition* at 11.

Of course, this is exactly what *did not* happen. When Progeny agreed to participate in cooperative joint testing with the three founding members of the Part 15 Coalition – Itron, Landis-Gyr, and WISPA – it gave those three entities discretion and control to select the Part 15 devices that would be included in the tests, which they did. The Coalition members also controlled the configurations of the tests and the collection and documentation of test data. It was only after the results of the joint tests clearly showed that unacceptable levels of interference would not result that the Coalition and its members began arguing that even further joint testing should be mandated by the Commission.

Another party calling for a third round of testing is wireless headset manufacturer, Plantronics. At first, Plantronics seems to acknowledge that it was appropriate only to require Progeny to conduct tests with a representative cross-section of Part 15 devices. Plantronics offers that "[t]o be clear, Plantronics is not suggesting that the Commission require Progeny to test its network against any and all Part 15 devices."[129] Having said this, Plantronics argues that, the fact that it has certified a single Part 15 device with the Commission is sufficient reason why Progeny should have reached out originally to Plantronics and proposed to conduct joint testing with it.[130] Plantronics makes this argument even though Plantronics acknowledges that more than 2,200 different devices have been authorized by OET to operate in the 902-928 MHz band during the past five years.[131] Given the significant number of Part 15 equipment certifications that exist in the Commission's records, Plantronics appears hard pressed to explain why Progeny should have originally reached out to a company that holds only one of those 2,200 certificates.

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[129] *Plantronics* at 8.

[130] *See id.* at 6 n.13.

[131] *Id.* at 7.

Plantronics and others also argue that further testing with their equipment is necessary because their devices are not representative of the unlicensed devices that have already been tested. For example, representatives of the utility industry have argued that additional testing is needed on SCADA monitoring devices. Progeny has addressed these arguments in a previous section of this opposition. In addition, Progeny explains in the following sections why the Commission was correct in rejecting such arguments with respect to other Part 15 devices and in finding that the unlicensed devices that were tested include a representative cross-section of the types of devices that exist in the 902-928 MHz band.

A. The Testing That Was Conducted Was Sufficient to Assess the Spectrum Sharing Potential of Progeny's Network with Plantronics' Wireless Headsets

Plantronics highlights in its petition a number of technical factors that it claims are unique to its unlicensed wireless headset devices. As a general manner, each of these factors have one thing in common, they contribute to the fact that Plantronics' headsets are, in Plantronics' words, "extremely sophisticated," "state-of-the-art" devices[132] and are far more capable of overcoming and avoiding undesired signals in the 902-928 MHz band than 'off-the-shelf' consumer devices.

Plantronics also claims that its wireless headsets are unique not because of any technical factor, but because of the intended purpose of their use – "professional audio"[133] – and the intended environment of their use – "high-density contract centers."[134] With respect to the first of these factors, Plantronics asserts that, because of its highly demanding audio performance

[132] *Id.* at 1, 2, 7, 10

[133] *Id.* at 10.

[134] *Id.* at 2; *see also Id.* at 10.

requirements, its equipment cannot experience any undesired signal artifacts.[135] Progeny, however, already conducted Part 15 testing with Sennheiser wireless headphones and Brookstone wireless speakers, the audio quality goals for which are arguably at least as demanding as the goals for call-center wireless headsets.

With respect to Plantronics's second point, Plantronics claims its high density call centers include installations where "dozens, if not hundreds, of units are utilized simultaneously and in close proximity."[136] Progeny notes, however, that even Plantronics' own user literature states that its 900 MHz wireless headsets can support no more than 54 simultaneous callers in a single facility.[137] If a Plantronics' customer wants to exceed 54 simultaneous users, Plantronics warns that interference between handsets could result and recommends using a mix of wireless headsets that operate in different spectrum bands, such as the 1.9 GHz band, which Plantronics markets.[138] The option to adjust the ratio between the number of 900 MHz headsets and the number of 1.9 GHz headsets that are used in a crowded call center is equally available to address any undesired signals from a nearby Progeny transmitter.

Further, the underlying premise of Plantronics' "high density" argument is that it seeks to use all 26 MHz of spectrum in the 902-928 MHz band to operate as many 900 MHz wireless headsets as possible in each call center to the exclusion of all other spectrum uses in an area, be they secondary or primary. This entitlement of exclusivity is entirely inconsistent with the

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[135] *Id.* at 10.

[136] *Id.* at 2.

[137] *See "Plantronics UC Toolkit Wireless Voice in the Office Environment,"* at 5, available at: http://www.plantronics.com/us/partners/consultant-alliance/media/wireless-office-whitepaper.pdf (last visited July 18, 2013) ("*Plantronics User Instructions*").

[138] *See id.* at 5 and 9.

Commission's long standing policies of promoting (and, in this case, requiring) shared use of scarce spectrum resources.

Plantronics also identifies various technical characteristics of its wireless headsets that it claims make them unique and therefore not representative of the unlicensed devices that were included in Progeny's joint and independent tests. As with almost all manufacturers, there can be subtle differences in implementation or execution, even while the same underlying technical approach, transmission or modulation scheme are employed. Plantronics' claims of unique aspects of its TDMA digital voice transmissions, channel selection approach, power control and antenna selection are unavailing. Progeny tested two Part 15 voices devices employing similar digital voice encoding technology, a Sony DSS TDD cordless telephone (FCC ID AK8SPPSS965) and a Motorola push-to-talk walkie talkie (FCC ID IHDP56HJ1), both of which performed exceedingly well in test conditions.[139] Progeny also tested at least three devices employing automatic approaches to choose least interfered channels.[140] The minor technical variations between manufacturer implementations of well-known technologies in no way suggest that the testing regimens that were completed do not constitute a valid and reasonably representative sampling of devices.

[139] *See Coexistence of M-LMS Network and Part 15 Devices*, Spectrum Management Consulting Inc., at 17 and 48 (Jan. 27, 2012) ("*Part 15 Field Test Report*") (included as an attachment to *Letter from Bruce A. Olcott, Counsel to Progeny LMS, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission*, WT Docket No. 11-49 (Jan. 27, 2012) ("*Progeny Part 15 Field Test Report*").

[140] *See id.* at 17.

B. The Testing That Was Conducted Was Sufficient to Assess the Spectrum Sharing Potential of Progeny's Network with Emergency Voice Pendants, Duress and Alarm Systems

The Coalition makes several arguments suggesting that the joint and independent testing that was conducted was insufficient to assess the spectrum sharing potential of Progeny's service with various voice and emergency distress devices.[141] None of these arguments, however, identify factors that have not already been considered previously in this proceeding.

For example, the Coalition observes that emergency voice pendants provide critical communications that cannot be subjected to outages or retransmission requirements. Progeny, however, tested a representative Part 15 emergency voice pendant in a range of conditions including worst case and break case conditions and in every condition the pendant continued to function as intended.[142]

The Coalition also repeats previous arguments that additional testing is needed on emergency duress and alarm systems.[143] In making this argument, the Coalition acknowledges that such devices employ time and frequency diversity, which "enhances alarm capture in commercial settings" and, in doing so, ensures that any transmissions of frequencies that are disrupted by undesired signals (such as other Part 15 devices) are successfully transmitted on other frequencies at the same time.[144] The Coalition also repeats claims that the simultaneous transmission of the same data on multiple frequencies results in multipath transmissions that can

[141] *See Coalition* at 12.

[142] *Progeny Part 15 Field Test Report* at 48.

[143] *Coalition* at 13.

[144] *Id.*

be used to help locate a mobile duress device.[145] Although the Coalition argues that additional testing is needed to assess the potential loss of some multipath signals on the position location process,[146] the Coalition fails to explain how this potential impact could be any different from signal interruptions caused by other Part 15 devices using the same spectrum.

Finally, the Coalition argues that additional study is needed on the potential impact of Progeny's service on repeater nodes that are used by some industries, such as alarm industries, to ensure comprehensive network coverage.[147] In fact, Progeny did complete extensive testing of repeaters during the comprehensive joint test process that was undertaken with Coalition member, Itron. The tests showed that Part 15 repeaters behave no differently in the presence of Progeny's service than other Part 15 devices. Therefore, the Coalition is incorrect in arguing that additional testing is needed on these technologies.

C. The Testing That Was Conducted Was Sufficient to Assess the Spectrum Sharing Potential of Progeny's Network with Battery-Assisted RFID Devices

Finally, the Coalition repeats arguments that, even though Progeny completed testing on two types of passive RFID devices, it did not complete testing using battery-assisted RFID devices, which the Coalition claims are more susceptible to interference.[148] Of course, the Coalition made this identical argument in comments that it filed with the Commission on December 21, 2012.[149] Further, in the Coalition's previous filing, the Coalition acknowledged

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[145] *See id.*

[146] *See id.*

[147] *See id.*

[148] *See id.* at 12.

[149] *See Comments of the Part 15 Coalition,* WT Docket No. 11-49 at 6 (Dec. 21, 2012).

that the passive RFID sensors that Progeny tested are often more susceptible to interference because such tags "must be produced at very low cost to scale to very high volumes, and do not provide the capability to avoid interference by frequency hopping or otherwise."[150]

In any event, all of these issues were thoroughly presented to the Commission for its consideration and, given the comprehensive nature of the multiple rounds of testing that were conducted, the Commission acted well within its reasonable discretion in concluding that the Part 15 devices that were subjected to testing were adequately representative of the types of technologies that are employed in Part 15 devices generally. Therefore, no reason exists for the Commission to conclude otherwise on reconsideration.

VII. THE SIGNIFICANT PUBLIC INTEREST BENEFITS OF PROGENY'S HIGHLY ACCURATE POSITION LOCATION SERVICE WERE EVIDENCED BY THE CSRIC TEST REPORT AND THE PUBLIC SAFETY COMMUNITY

The Coalition persists in challenging the Commission's conclusion that Progeny's highly accurate position location service "can bring significant public safety benefits." [151] WISPA's petition takes these arguments a step further, asserting that the Commission has "unwisely elevated the speculative and unproven nature of Progeny's service over the many established and important benefits of existing Part 15 users."[152]

In reality, however, the Commission expressly balanced in its *Order* the important public interest benefits that are routinely provided by Part 15 devices with the important public safety

[150] *Id.*

[151] *Coalition* at 18 (*citing Order*, ¶ 1).

[152] *WISPA* at 21; *see also Silver Spring Networks* at 16 (making the same argument).

benefits that can be achieved through the operation of Progeny's service.[153] Further, although Progeny has yet to provide commercial service (having been held up by the repeated rounds of tests that were undertaken with several of the petitioners), that does not mean that the potential benefits of Progeny's service are speculative or unproven.

As the Commission noted in its *Order*,[154] the tests conducted by Working Group 3 of the Commission's Communications Safety Reliability and Interoperability Council ("CSRIC") clearly showed the tremendous capabilities of Progeny's highly accurate location service as compared to existing and potential technologies. During the CSRIC test process, Progeny's E911 location service was consistently able to reduce the area of first responder search rings by 90 percent (effectively a tenfold improvement) when compared to other E911 location technologies. Progeny's technology was further able to pinpoint within two meters the vertical height of the calling party (essentially floor level), potentially revolutionizing the speed of emergency response in large multi-story urban environments.

WISPA, however, belittles the CSRIC test results, claiming that the Commission "conveniently ignored the CSRIC Report's conclusion that 'even the best location technologies tested have not proven the ability to consistently identify the specific building and floor, which represents the required performance to meet Public Safety's expressed needs.'"[155] Silver Spring

[153] *See, e.g., Order*, ¶ 29 (acknowledging "the heavy use of the 902-928 MHz band by Part 15 unlicensed operations, particularly those that provide important services to the nation's communications infrastructure").

[154] *Order*, ¶ 3.

[155] *WISPA* at 22 (*quoting CSRIC Report* at 54-55).

Networks goes even further, describing Progeny's indoor location capabilities as a "disappointingly modest improvement in E-911 services."[156]

The context of the CSRIC Report, however, was repeatedly clarified in the record of this proceeding by leading members of the public safety community, which explained to the Commission that "*[a]ny* significant improvement over the current regime of impossibly-large outdoor search rings and indeterminate indoor search rings must be encouraged, whether or not it can reach our ultimate ideal right away."[157] Therefore, "M-LMS technologies such as Progeny's represent a *tremendous* opportunity to enable *immediate and dramatic improvements* in wireless location accuracy in precisely those areas of the country that are the most challenging for existing technologies."[158]

Similarly strong views were expressed in this docket by the International Association of Chiefs of Police,[159] International Association of Fire Chiefs,[160] the International Association of Fire Fighters,[161] The National Sheriffs' Association,[162] the San Francisco Department of

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[156] *Silver Spring Networks* at 2.

[157] *See* Letter from Telford E. Forgety, III; Director of Government Affairs & Regulatory Counsel, NENA: The 9-1-1 Association, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 11-49, at 2 (March 22, 2013) (*emphasis in original*).

[158] *Id.*

[159] *See* Letter from Bart R. Johnson, Executive Director, International Association of Chiefs of Police, to The Honorable Julius Genachowski, Chairman, Federal Communications Commission, WT Docket No. 11-49, at 1 (March 29, 2013).

[160] *See* Letter from Chief Hank C. Clemmensen, President and Chairman of the Board, International Association of Fire Chiefs, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 11-49 (March 25, 2013).

[161] *See* Letter from Harold A. Schaitberger, General President, International Association of Fire Fighters, to The Honorable Julius Genachowski, Chairman, Federal Communications Commission, WT Docket No. 11-49 (March 25, 2013).

Emergency Management,[163] the Professional Firefighters of New Jersey,[164] and the Boulder Regional Emergency Telephone Service Authority.[165] Further, the unique and critical need of the deaf and hearing impaired community for the highly accurate indoor location capabilities of Progeny's service was expressed by a coalition of eight consumer interest organizations.[166] Given the abundance of documentation in the record regarding the tremendous potential benefits of Progeny's service, the Commission was fully justified in considering this as a relevant factor in its decision, and in considering the unanimous views of the public safety and hearing impaired communities as more dispositive of their needs than the self-serving characterizations of the petitioners.

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[162] *See* Letter from Sheriff (ret.) Aaron D. Kennard, Executive Director, National Sheriffs' Association, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 11-49 (April 3, 2013).

[163] *See* Letter from Lisa Hoffmann, Deputy Director, Division of Emergency Communications, City and County of San Francisco Department of Emergency Management, to The Honorable Julius Genachowski, Chairman, Federal Communications Commission, WT Docket No. 11-49 (March 25, 2013).

[164] *See* Letter from Dominick Marino, President, Professional Firefighters Association of New Jersey, to The Honorable Julius Genachowski, Chairman, Federal Communications Commission, WT Docket No. 11-49 (April 3, 2013).

[165] *See* Letter from Joseph P. Benkert, Attorney for the Boulder Regional Emergency Telephone Service Authority, to The Honorable Julius Genachowski, Chairman, Federal Communications Commission, WT Docket No. 11-49 (March 20, 2013).

[166] *See* Letter from Claude L. Stout, Executive Director, Telecommunications for the Deaf & Hard of Hearing, et al., to The Honorable Julius Genachowski, Chairman, Federal Communications Commission, WT Docket No. 11-49 (April 12, 2013).

VIII. NO NEED EXISTS TO IMPOSE ADDITIONAL CONDITIONS ON PROGENY'S COMMERCIAL OPERATING AUTHORITY BEYOND THOSE THAT PROGENY OFFERED VOLUNTARILY

The extensive tests that Progeny conducted jointly with Part 15 device users and manufacturers clearly show that Progeny's M-LMS network will operate in the 902-928 MHz band without causing unacceptable levels of interference to Part 15 devices, and the Commission was correct in affirming this conclusion. In an effort to provide the unlicensed community an even greater level of assurance, Progeny volunteered certain spectrum etiquette measures, which the Commission's *Order* acknowledges.

Several petitioners have argued that the measures volunteered by Progeny are insufficient and additional conditions should be imposed on Progeny's commercial operations. For example, some petitioners argue that the Commission should have given greater consideration to additional conditions that were proposed by the Part 15 Coalition on May 30, 2013,[167] more than two weeks after then-Chairman Genachowski placed the *Order* on circulation[168] and also after two of the three Commissioners that voted in favor of the *Order* had reportedly formally entered their favorable votes.[169]

The additional conditions proposed by the Coalition include the disclosure of very detailed and extremely sensitive information regarding the specific locations and operating

[167] *WISPA* at 22-23; *Silver Spring Networks* at 21.

[168] FCC Items on Circulation, http://transition.fcc.gov/fcc-bin/circ_items.cgi (last visited May 17, 2013; this website has since been updated).

[169] *See Communications Daily*, at 7-8 (May 28, 2013) (reporting that both "acting Chairman Mignon Clyburn and Commissioner Jessica Rosenworcel, voted for an order approving Progeny's proposed rollout of its E-911 location service").

parameters of every Progeny beacon,[170] information that could compromise the security of the network and its reliability for use for public safety and, potentially, homeland security. Further, Progeny's methods of selecting its transmitter locations and the manner in which they are placed surrounding a community is highly proprietary information that is specifically related to the manner in which Progeny achieves highly accurate and reliable location results.

The Utility Trade Associations argue that Progeny should have been required to provide notice to the Commission 30 days prior to initiating operations in each Economic Area, rather than 15 days following the initiation of service.[171] Such a requirement would unnecessarily burden Progeny without providing corresponding benefits to the utility community. The Utility Trade Associations' proposal appears to be premised on the idea that Progeny constructs entire networks and then turns them all on at once with the flip of a switch. This is not the way networks are constructed. Instead, Progeny constructs and places into operation small groups of transmitters and then assesses their operation in the specific RF environment of the community in question. Additional beacons are gradually added until a network is essentially complete. Thus, the issuance of prior notice, presumably before the first beacon is turned on, would provide no actual value to the utility community in terms of advance notice. Instead, Progeny offered to provide notification promptly after a network is completed in an Economic Area because such notice would provide utilities a real opportunity to assess whether any appreciable change in their system level operations resulted.

WISPA repeats its argument that Progeny should be required to work closely with WISPs in every region of the country, not just in very rural areas, to ensure their continued service to

[170] *See* Letter from Laura Stefani, et. al, Counsel for the Part 15 Coalition, to Marlene H. Dortch, Secretary, Federal Communications Commission (May 30, 2013).

[171] *Utility Trade Associations* at 10-11

their consumers.[172] WISPA persists in making this argument even though WISPA has never provided any evidence that WISP operators use the 900 MHz band extensively outside of very rural areas. In fact, even in WISPA's petition for reconsideration, WISPA explains that "[a]mong the other important uses, WISPs use the 902-928 MHz band to provide fixed wireless broadband services to areas that, because of terrain, foliage and other characteristics, cannot receive broadband services using other unlicensed bands."[173] WISPA has never explained just what these "other important uses" consist of and it would be inappropriate for WISPA to first provide such an explanation during a reconsideration proceeding.

Further, Progeny offered to work closely with WISPs in very rural areas not because Progeny believes that they will need assistance. In fact, there are numerous interference avoidance and mitigation measures that WISPs employ on a regular basis to accommodate other Part 15 noise sources and which they can also employ in order to operate in the presence of Progeny's network. Instead, Progeny offered this assistance because of WISPA's claim that 900 MHz WISPs are often the only means available (other than satellite, of course) to provide broadband services to very rural areas. In stark contrast, consumers in suburban and urban areas have abundant other options to secure broadband services.

Finally, Silver Spring Networks proposes a new condition that was never suggested before in this proceeding. Specifically, Silver Spring Networks argues that the Commission should require Progeny to "turn down" its transmitters when no terminal requires active positioning.[174] There are multiple critical flaws with this proposal. First, more than 400,000

[172] *WISPA* at 23.

[173] *Id.* at 2-3.

[174] *Silver Spring Networks* at 20.

E911 calls are made from wireless phones every day in the United States in response to emergencies that happen at a moment's notice.[175] It would be impossible to activate a position location network every time a wireless E911 call is made and such "cold starts" would greatly increase the time required to secure a location fix on the wireless device.

Second, because of the broadcast-only design of Progeny's position location network, individual wireless devices would have no way of notifying the Progeny network that they require tracking and location services. Thus, Silver Spring's proposal would require the addition of a transmission return path from each handset to the network, which would dramatically increase the potential interference to Part 15 devices.

Instead, the Commission appropriately reviewed and considered the spectrum etiquette proposals that Progeny offered into the record and acknowledged them for what they are – the most recent in a long series of efforts by Progeny to launch a highly accurate position location network that will operate in the upper portion of the 902-928 MHz band in a highly compatible manner with other authorized users of the spectrum. Therefore, no reason exists for the Commission to reconsider, modify, or supplement the spectrum etiquette measures that were offered by Progeny.

[175] *See* CTIA, Wireless Quick Facts, Year-End Figures, *available at* http://www.ctia.org/media/industry_info/index.cfm/AID/10323 (last visited July 19, 2013).

IX. HAVENS' NUMEROUS REPETITIOUS ARGUMENTS HAVE EACH BEEN ADDRESSED PREVIOUSLY BY THE COMMISSION AND ARE MOSTLY IRRELEVANT TO THIS PROCEEDING

Finally, Progeny briefly addresses a number of arguments made by Warren Havens individually and through some of his various legal entities ("Havens").[176] As discussed below, few of Havens' arguments are relevant to the issues before the Commission in this proceeding.

First, Havens repeats his previously rejected argument that Progeny should be required to use its M-LMS network solely for tracking vehicles and not for tracking wireless devices to support E911.[177] The Commission directly addressed this issue, however, in the *Limited Waiver Order*, concluding that M-LMS was never intended to be used solely for intelligent transportation services.[178]

Second, Havens argues that the Commission's unacceptable levels of interference standard may be void and not legally enforceable against Progeny because it is vague and subjective.[179] Progeny, however, is not seeking relief from the Commission's unacceptable levels of interference standard having already satisfied it, as concluded in the Commission's *Order*. Further, Havens' argument constitutes an untimely challenge to the Commission's adoption of its unacceptable levels of interference standard more than 15 years ago.

Third, as noted in a previous section of this opposition, Havens argues that the Commission's *Order* was not based on reasoned decision making because the Commission based its finding on the fact that Progeny's service was designed with the goal of minimizing

[176] Comments of Skytel, WT Docket No. 11-49 (filed Dec. 21, 2012) ("*Havens*").

[177] *See id.* at 4-5.

[178] *See Limited Waiver Order*, ¶¶ 22 and 30.

[179] *Havens* at 6.

interference to Part 15 devices and not based on the requirement for Progeny to actually demonstrate that unacceptable levels of interference will not occur.[180] Of course, Havens is incorrect in his underlying premise. The Commission clearly found in its *Order* that Progeny both designed its system with the goal of minimizing interference to Part 15 devices and Progeny conducted tests that demonstrated that unacceptable levels of interference will not occur.

Fourth, Havens challenges the Commission's 2011 grant of two waivers to Progeny arguing that the Commission failed to consider, *inter alia*, "the effects that Progeny's services may have on the overall LMS environment, and the underlying purpose of the LMS allocation."[181] The Commission's *Limited Waiver Order*, however, clearly did address these issues when explaining why the grant of two waivers to Progeny was justified. In any event, it is inappropriate for Havens to use this proceeding to attempt to challenge the Commission's *Limited Waiver Order*, which was granted in 2011.

Fifth, Havens argues that the Commission should have considered his prior arguments that the use of an LTE-based location infrastructure would have been superior to the technology that Progeny employed for its network.[182] The Commission's rules for M-LMS do not mandate the use of a single type of modulation technology, and certainly not LTE technology. Therefore, Havens' arguments in this regard are irrelevant.

Sixth, Havens details his long repeated accusations regarding the Commission's original issuance of M-LMS licenses to Progeny more than a decade ago and their current validity.[183]

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[180] *Id.* at 6-9.

[181] *Id.* at 9-10, 12-14.

[182] *Id.* at 13-14, 26-28.

[183] *See id.* at 2-3; 14-20.

Those issues were carefully considered and resolved by the Commission in Progeny's favor in an order released by the Chief of the Mobility Division on May 31, 2012 and they do not warrant reexamination here.[184]

Seventh, Havens argues that the Commission was incorrect in finding that the results of the joint and independent tests that were conducted demonstrate that Progeny's service will not cause unacceptable levels of interference to Part 15 devices.[185] Such arguments, however, were thoroughly considered by the Commission prior to its issuance of its *Order* and their inclusion in Havens' petition was repetitious and unpersuasive. Havens argues that Progeny's tests were invalid because they only addressed operations on the four megahertz of spectrum that Progeny is actually using for its location service, rather than on the full eight megahertz of spectrum that is covered by Progeny's license.[186] Obviously, as was thoroughly documented in the numerous field tests conducted, Progeny's service will not cause interference (unacceptable or otherwise) to Part 15 devices in the spectrum that Progeny isn't using, so it was unnecessary to conduct tests to verify this fact.

Havens further argues that Progeny should have been required to conduct tests on vehicles to ensure Progeny's provision of location services to vehicles will not cause unacceptable levels of interference.[187] Progeny's use of a broadcast-only technology, however,

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[184] *See* Application for Transfer of Control of Progeny, LMS LLC to Progeny LMS Holdings LLC (ULS File No. 0003250058) and Notification of the Consummation of the Transfer of Control of Progeny LMS LLC to Progeny LMS Holdings LLC (ULS File No. 0003274382), Order, DA 12-851 (WTB, May 31, 2012).

[185] *Havens* at 20-25.

[186] See id. at 22.

[187] *See id.* at 23-24.

means that the spectrum sharing capabilities of Progeny's service will be the same regardless of the types of devices (including vehicles) that are tracked by Progeny's service.

Havens also argues in his comments that Progeny failed to consider the presence of numerous different kinds of spectrum uses in the 902-928 MHz band, testing its service only with Part 15 devices.[188] The selection of Santa Clara County as the location of Progeny's tests, however, was specifically intended to capture the vibrant and complex conditions of a very noisy RF environment and, in this way, the use of the 902-928 MHz band by multiple services was necessarily considered.

Eighth, Havens argued that Progeny failed to provide comparative data on the location effectiveness of its service as compared to other location technologies.[189] The CSRIC report, however, details the highly favorable comparative capabilities of Progeny's service, findings which the Commission appropriately acknowledged in its *Order*.[190]

Ninth, Havens challenges whether the Commission demonstrated "any independent, meaningfully competent mastery of radiolocation technology" and argued that its lack of "expertise whatsoever" undermines the *Order* as a product of reasoned decisionmaking.[191] Havens' accusations in this regard are, of course, indefensible and should be summarily stricken from the record.

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[188] *See id.* at 24.

[189] *See id. at 26.*

[190] *See Order*, ¶ 3.

[191] *Havens* at 28-29.

Tenth, Havens argues at length that the Commission improperly permitted Progeny to file some of the Part 15 joint test reports on a confidential basis.[192] If Havens had read the joint test reports, however, he would have realized that it was not the test results that were filed confidentially, but proprietary information regarding the design and operation of certain of the Part 15 equipment that was subjected to tests. Such information can be appropriately treated as confidential under the Commission's rules.

Finally, Havens argues at length that he and his various companies have standing in this proceeding when they clearly do not. Havens does not claim to manufacture or operate Part 15 devices in the 902-928 MHz band and the M-LMS licenses that he does hold permit operations in other portions of the band that are not co-frequency with Progeny's spectrum. Therefore, in the interests of administrative efficiency, the Commission is justified in dismissing Havens' petition on this basis alone.

X. CONCLUSION

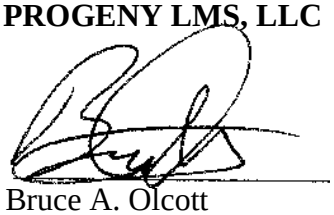
For the reasons provided herein, the Commission should conclude that the petitions for reconsideration that were filed in this proceeding are based solely on repetitious arguments and restatements of issues that were thoroughly considered by the Commission during the 16 months prior to its issuance of an *Order* authorizing Progeny to begin commercial operations. The Commission properly considered and applied its unacceptable levels of interference standard, appropriately concluding that, based on the extensive test results, Progeny has demonstrated that its network complies with the requirements of Section 90.353(d) of the Commission's rules. No need exists for the Commission to modify its decision on reconsideration. Instead, summary

[192] *See id.* at 28-39.

dismissal of the petitions for reconsideration is warranted and justified under the Commission's rules.

Respectfully submitted,

PROGENY LMS, LLC



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July 19, 2013

CERTIFICATE OF SERVICE

I, Preston N. Thomas, hereby certify that on this 19th day of July, 2013, I caused copies of the foregoing "Opposition of Progeny LMS, LLC" and "Progeny LMS, LLC Petition for Waiver of Section 1.106(g)" to be placed in the U.S. Postal Service, first class postage prepaid, addressed to the following persons:

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